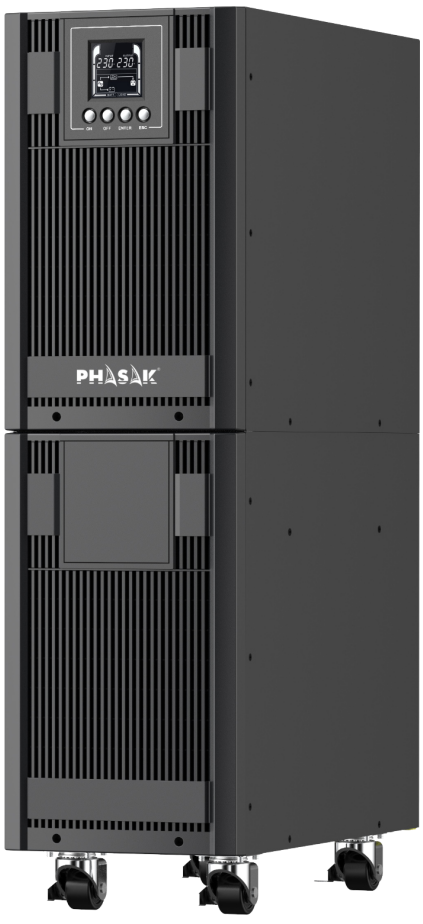
PHASAK®

# MANUAL

## Serie Basic Pro

PH 8060 · 6000 VA
PH 8070 · 10000 VA

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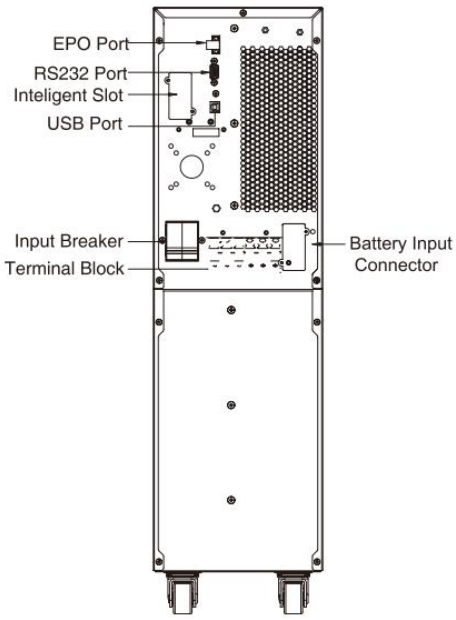
Thank you for choosing PHASAK. This uninterruptible power supply (UPS) from the Basic Pro series has been designed with **True Double Conversion** technology to ensure maximum protection in critical infrastructures. Please read the safety instructions carefully before installing the equipment.

This On-Line series provides optimum protection for IT equipment, communication servers and data centres. A rectifier converts the incoming AC into DC; from this, the inverter generates a sinusoidal voltage that continuously powers the loads, eliminating mains disturbances. In the event of a mains failure, the maintenance-free batteries power the inverter. Confirm that the model matches the one purchased using the reference located on the rear of the unit.




General view of the UPS and its connections.

## Important safety instructions

### Transport

Transport the UPS only in its original packaging to protect it against knocks and impacts.

### Condensation

If the equipment is moved from a cold to a warm environment, condensation may occur. The UPS must be completely dry before installation. Wait at least two hours for the system to acclimatise.

### Installation

- It is a permanently connected device and must be installed by qualified personnel.
- Do not install it near water, humidity, direct sunlight or heat sources.
- Do not block the ventilation grilles; leave at least 0.5 m of space at the front and rear.
- It must be connected to a TN earthing system, with a single-phase supply in accordance with the unit's rating plate and a suitable earth connection.
- Route the cabling so that it cannot be stepped on or cause tripping.
- Before connecting it to the building installation, correctly earth the UPS. The external battery, if any, must also be earthed.
- The installation must include an emergency disconnect device and suitable short-circuit protection.
- The equipment can be powered from two sources: mains and internal or external battery.

### Load connection

Do not connect household appliances (such as hairdryers) to the output socket-outlets.

### Overload warning

Do not connect devices that may overload the system, such as high-power laser printers, to the UPS outputs.

### Maintenance and electrical hazard

> **Danger:** the UPS operates with hazardous voltages. Repairs must be carried out only by qualified personnel.

**Batteries:** even when disconnected from the mains, the internal components remain connected to the batteries and may present a risk of electric shock.

**Fire:** do not dispose of the batteries in fire, as they may explode. Do not open or destroy the batteries; the released electrolyte is toxic and harmful to skin and eyes.

## Standards

### Safety

IEC/EN 62040-1

### Electromagnetic compatibility (EMC)

Conducted emissions: IEC/EN 62040-2 (Category C3)
Radiated emissions: IEC/EN 62040-2 (Category C3)

### Immunity (EMS)

ESD: IEC/EN 61000-4-2 Level 4
RF: IEC/EN 61000-4-3 Level 3
EFT: IEC/EN 61000-4-4 Level 4
Surges: IEC/EN 61000-4-5 Level 4
Conducted RF: IEC/EN 61000-4-6 Level 3
Magnetic field: IEC/EN 61000-4-8 Level 4

### Product for commercial and industrial use

In some environments, additional measures may be required to avoid interference.

### Package contents

- 1 × UPS PH 8060 / PH 8070
- 1 × User manual

## Description of commonly used symbols

The symbols included in this manual allow quick identification of warnings, electrical hazards, connections, functions and safety aspects. Their correct interpretation is important for proper handling of the UPS.

| | |
|---|---|
| Attention / take special care | Caution: high voltage |
| Alternating current (AC) source | Direct current (DC) source |
| UPS on / off | Protective earth |
| Recycling | Do not dispose of with household waste |

## Features

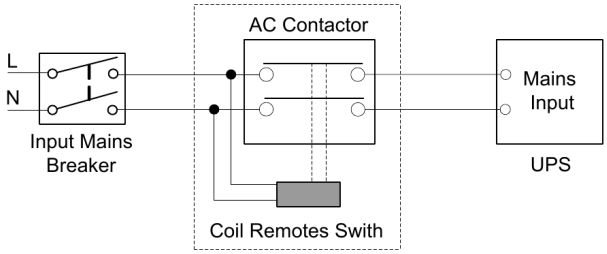
- True online double conversion technology, with high power density, frequency independence and generator compatibility.
- Input power factor ≥ 0.99 and overall efficiency ≥ 92%, reducing consumption and cabling costs.
- Low input current distortion, avoiding mains contamination.
- Output power factor 0.9 with a perfect sine wave, suitable for most critical equipment.
- Wide input voltage, frequency and waveform range, reducing unnecessary battery consumption.
- ECO mode with efficiency ≥ 96% to reduce consumption.
- Battery-free start capability.

# Installation

### Recommended cable cross-sections and protective devices

| | PH 8060 (6 kVA) | PH 8070 (10 kVA) |
|---|---|---|
| Protective earth conductor | 6 mm² (UL1015 10 AWG) | 10 mm² (UL1015 8 AWG) |
| Input conductors L, N | 6 mm² (UL1015 10 AWG) | 10 mm² (UL1015 8 AWG) |
| Input circuit breaker | 40 A / 250 Vac | 63 A / 250 Vac |
| External battery cable (+/–) | 6 mm² (UL1015 10 AWG) | 10 mm² (UL1015 8 AWG) |
| External battery fuse (+/–) | 40 A | 60 A |
| External battery breaker (+/–) | 40 A | 60 A |
| Terminal tightening torque | 3.95 ~ 4.97 Nm | |

**Voltage backfeed risk.** It is recommended to install an external isolating device between the mains and the UPS. Fit a warning label: «Isolate the UPS before working on this circuit and check for the absence of hazardous voltage between terminals.»



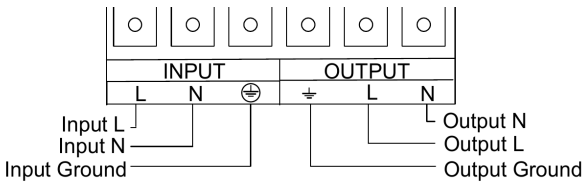

en cuenta que, incluso con el SAI apagado o desconectado de la red, **la salic**

External isolating device between the mains and the UPS.

Even with the UPS off or disconnected from the mains, the output may remain energised by the internal or external battery. For complete disconnection: switch off the UPS, cut the mains supply, wait until it shuts down completely and, finally, disconnect the battery.

Start by opening the terminal block cover on the rear. For **6K** models use UL1015 10 AWG cable (6 mm²); for **10K** models, UL1015 8 AWG (10 mm²). The terminal tightening torque is **3.95 ~ 4.97 Nm**. Check that the input line can handle the required current: **do not use a standard wall socket** as the input, as its capacity may be insufficient.

Connect the **earth conductor first** (green or green/yellow cable) and then the input and output conductors to their respective terminals, ensuring all connections are secure. Crimped terminals are recommended.

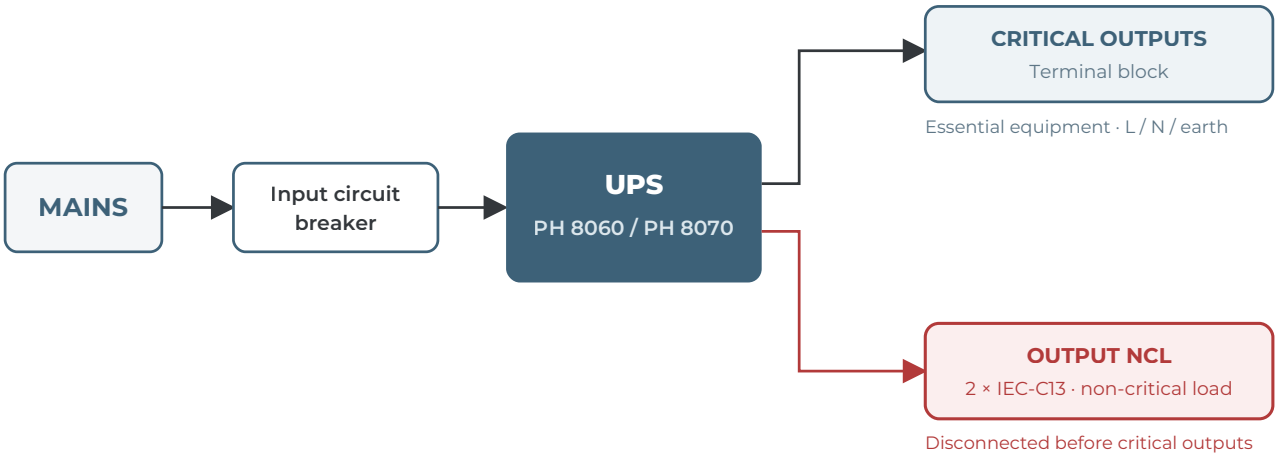



Terminal block wiring diagram (input and output).

An output circuit breaker must be installed between the UPS and the load and, where applicable, residual current protection. Before connecting the loads, ensure they are off and start them progressively, preferably one at a time. Check all wiring and carry out an **initial battery charge of 8 hours**. Power the

equipment from the mains and set the input circuit breaker to ON so that charging starts automatically. If connecting inductive loads (monitors, laser printers), take their inrush current into account when sizing the UPS.

## Output for non-critical loads (Output NCL)




These models incorporate **two additional AC outlets** (2 × IEC-C13) identified as **Non-Critical Load (Output NCL)**, intended to power non-priority equipment.

The NCL outlets are intended for **non-critical loads**, i.e. equipment whose supply can be interrupted without risk. The UPS gives priority to the **critical outputs** of the terminal block: when it is necessary to preserve the available runtime, the NCL output is **disconnected before the critical outputs**, reserving energy for essential equipment and extending its backup. When the mains is restored, the NCL outlet is powered again.

> Connect only loads that can be interrupted without risk to the NCL outlets. Critical loads must always be connected to the output terminal block.

## EPO function — Emergency Power Off

The EPO function (Emergency Power Off) allows the UPS output to be cut immediately in an emergency. The EPO connector, located on the rear, is normally closed by a wire jumper (supplied as an accessory). When opened, the UPS interrupts the output and enters the EPO state. To restore operation, close the EPO connector again, press and hold **OFF** for more than 1 second to clear the state (the equipment stops sounding the alarm and switches to bypass mode) and finally switch the UPS on manually.

## Button functions

| | |
|---|---|
| **ON** | Turns the UPS on. In line, ECO or converter mode, holding it for 5 s activates the battery test. |
| **OFF** | Turns the UPS off. |
| **ENTER** | Held for 5 s, enters configuration mode (with the UPS in bypass or standby). Confirms the selection; held, exits saving changes. Scrolls up in the LCD menu. |
| **ESC** | Shows the next option. Held, exits without saving; held for 5 s enables/disables the audible alarm. Scrolls down in the LCD menu. |

| | |
|---|---|
| **ENTER + ESC** | With normal supply, pressed together for 5 s the UPS switches to bypass mode. |

## Operating status on the LCD display

The LCD display shows in real time the main electrical parameters, battery status, connected load and possible warnings. The operating modes are:

| | |
|---|---|
| **Line mode** | The mains supplies power to the loads. At the same time, the UPS charges the battery. |
| **Battery mode** | The unit supplies output power from the battery. |
| **ECO mode** | When the input voltage is within the regulated range, the UPS delivers the bypass voltage to the output to save battery. |
| **Bypass mode** | When the input voltage is within the bypass range, the UPS delivers the bypass voltage to the output. |
| **Converter mode** | When the input frequency is between 40 Hz and 70 Hz, the UPS can be set to a fixed output frequency of 50 Hz or 60 Hz. |
| **Standby mode** | The mains charges the battery and there is no output voltage until the UPS is switched on. |
| **Warning mode** | The UPS displays a warning, for example due to overload. |
| **Fault mode** | The UPS enters fault mode, for example when a short circuit occurs at the output. |

### LCD query screens

The LCD has several screens that allow you to check the main operating parameters:

| Left value | Right value |
|---|---|
| AC input voltage (V) | AC output voltage (V) |
| Input frequency (Hz) | Output frequency (Hz) |
| Load percentage (W) | Battery voltage |
| Load percentage (VA) | Battery voltage |
| Battery capacity (%) | Battery voltage |
| Runtime (min) | Battery voltage (V) |

## LCD display configuration


**01 · Output voltage** Allows selection of 208, 220, 230 or 240 Vac. Default: 230 Vac.


**02 · Output frequency** Allows selection of 50 or 60 Hz. Default: 50 Hz.


**03 · ECO mode** 0% disabled; 10% enables ECO if the input voltage is within ±10%; 15% enables it within ±15%. Default: disabled.


**04 · Bypass output** DIS disables the bypass output in standby, except automatic bypass on fault or overload. ENA (default) keeps it available when mains is present, even without switching on the UPS.


**05 · Converter mode** DIS leaves the UPS in normal mode. ENA fixes the output to 50 or 60 Hz and reduces the load capacity by 40%. Default: DIS.


**06 · EPO/ROO** EPO allows emergency shutdown from a remote location. ROO allows the UPS to be switched on or off remotely. Default: EPO.


**07 · Number of EBM** Sets the number of external battery packs. On long-run models the default is 1bP.


**08 · Reserved** Unused parameter, reserved for future functions or internal system settings.


**09 · Buzzer** DIS disables the audible warning, although it will still sound on alarm or fault. ENA (default) keeps it enabled.


**10 · Wiring fault alarm** ENA enables the alarm if line and neutral are reversed. DIS disables that warning. Default: ENA.


**11 · DC start** ENA allows the UPS to be started without mains if DC voltage is available. DIS requires mains supply for starting. Default: DIS.


**12 · Auto restart** ENA allows the UPS to restart automatically when the mains returns after a shutdown. DIS prevents this. Default: ENA.


**13 · Overload restart** ENA allows automatic restart after an overload fault. DIS prevents it. Default: ENA.


**14 · Short-circuit restart** ENA allows automatic restart after a short-circuit fault. DIS prevents it. Default: DIS.


**15 · Bypass voltage range** Sets the minimum and maximum acceptable voltage for bypass. Left: 10/15/20%. Right: 10/15%. Default: 15% min and 10% max.


**16 · Bypass frequency range** Sets the acceptable frequency margin for bypass between 1% and 10% of the nominal frequency. Default: 10%.


**17 · ECO frequency range** Sets the acceptable frequency margin for ECO mode between 1% and 10% of the nominal frequency. Default: 5%.


**18 · Automatic battery test period** Sets the automatic battery test interval between 0 and 45 days. Default: 7 days.


**19 · External battery type** STD sets a standard battery and allows capacity and runtime calculation. CUS sets a custom battery and does not allow capacity or discharge time calculation. Default: STD.


**20 · Restore defaults** NO keeps the current configuration. YES restores the UPS default values. To apply, the equipment must be switched off.

## Special UPS functions

This series includes special functions for certain applications. Before using any of them, it is recommended to consult your local distributor first.

### ECO function

With the ECO function enabled, the load is powered directly from the mains through the internal filter, provided the input voltage remains within the permitted range, improving overall efficiency (can reach or exceed **96%**). If the mains fails or goes out of range, the UPS automatically switches to line or battery mode. In return, the load is not as protected as in line mode and the transfer time from ECO to battery is approximately **10 ms**; it is not recommended with very sensitive loads or unstable mains.

### Converter function

In converter mode the UPS operates with a fixed output frequency of 50 Hz or 60 Hz, useful for frequency-sensitive equipment. If the mains fails, the equipment switches to battery mode. As a limitation, the load capacity is reduced to 60% of nominal (40% reduction) and **no bypass is available**.

### Bear in mind

- In ECO mode the efficiency is higher than in online mode, but the transfer time is not 0 ms.
- In converter mode the output frequency is always 50 Hz or 60 Hz and the load capacity is reduced by 40%; in addition, no bypass is available. When converter mode is enabled, ECO mode is set to 0%.
- **ROO** (remote on/off): if enabled, the UPS can be switched on or off via the ROO port. With the port disconnected the UPS switches off; connected, it switches on when the mains is normal.
- The UPS does not automatically detect the number of external batteries: it must be entered manually. On standard models, this setting is disabled.

## Troubleshooting

| Situation | Possible cause | Action |
|---|---|---|
| The UPS shows a warning on the display | Installation error | Check the LCD code or message and check the affected element before it develops into a fault. |
| EPO active | The EPO connector is open | Check the EPO connector status and reset it correctly. |
| Battery open | Battery disconnected or battery breaker off | Check the battery bank connection, switch on the breaker and run a battery test. |
| Fan alarm | Fan blocked or disconnected | Check the fan and its operation. |
| Installation error | Poor earth connection or line/neutral reversal | Check the earth connection and correct the wiring if necessary. |
| Low battery | Insufficient voltage, capacity or runtime | Check the state of charge; if the alarm is continuous, the battery is close to depletion. |
| Overload | Demand exceeds UPS capacity | Remove non-critical loads and check whether any connected equipment is causing the issue. |
| Charger fault | Internal charger anomaly | Contact the distributor or technical service. |
| Abnormal ambient temperature | Environment too hot | Improve ventilation and check the room temperature. |
| Output short circuit | Short at the output or in the connected load | Remove all loads, switch off the UPS, check the output and do not restart until the short circuit is cleared. |
| Voltage backfeed | The output voltage returns to the input | Contact the distributor or technical service. |
| No indication or alarm, although connected | No input voltage | Check the mains, the building wiring, the input cable and the input circuit breaker. |
| BYPASS icon flashing with mains available | The inverter is not on | Press the ON button to start the UPS. |
| Runtime lower than expected | | |

| Situation | Possible cause | Action |
|---|---|---|
| | Discharged or deteriorated batteries | Charge the batteries for at least 12 hours and check their condition. |
| If any abnormal situation not covered here occurs, contact technical service. | | |

# Technical specifications

| Reference | PH 8060 | PH 8070 |
|---|---|---|
| Power | 6000 VA / 5400 W | 10000 VA / 9000 W |
| Power factor | 0.9 | 0.9 |
| **INPUT** | | |
| Nominal voltage | 208/220/230/240 Vac | |
| Voltage range | 110 – 300 Vac | |
| Frequency | 50/60 Hz (auto-detection) | |
| Frequency range | 45 – 55 Hz | |
| Phase | Single-phase + neutral | |
| **OUTPUT** | | |
| Nominal voltage (bat.) | 208/220/230/240 Vac | |
| AC voltage regulation (bat.) | ± 1% | |
| Frequency range (sync.) | 50/60 Hz | |
| Frequency range (bat.) | ± 0.05% | |
| Output socket-outlets | Terminal block (critical loads) + 2 × IEC-C13 (Output NCL) | |
| Harmonic distortion | ≤ 3% THD (linear load); ≤ 5% THD (non-linear load) | |
| Transfer time (AC / bypass) | Zero / 0 ms (typical) | |
| Waveform (bat.) | Pure sine wave | |
| Efficiency AC / battery / ECO | 93% / 91% / 96% | |
| **BATTERY** | | |
| Quantity / type | 16 × 12 V / 7 Ah | 16 × 12 V / 9 Ah |
| Charge time (90%) | 4 h | 6 h |
| Charge current / voltage | 1 A / 2 A / 4 A · 192 Vdc ± 1% | |
| **INDICATORS** | | |
| Display / alarms | LCD · battery mode, low battery, overload, internal fault | |
| **PHYSICAL CHARACTERISTICS** | | |
| Dimensions (W × H × D) | 196 × 702 × 412 mm | 196 × 702 × 412 mm |
| Weight | 52.3 kg | 61.0 kg |
| Operating humidity | 0 – 90% non-condensing | |
| Operating temperature | 0 – 40 °C | |
| **IDENTIFICATION** | | |
| EAN | 0745604518895 | 0745604518901 |

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